

H. PLUMMER.
UNIVERSAL TOOL SHARPENER.
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1,359,271.

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Fig. 1.

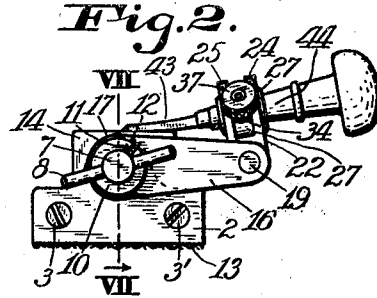
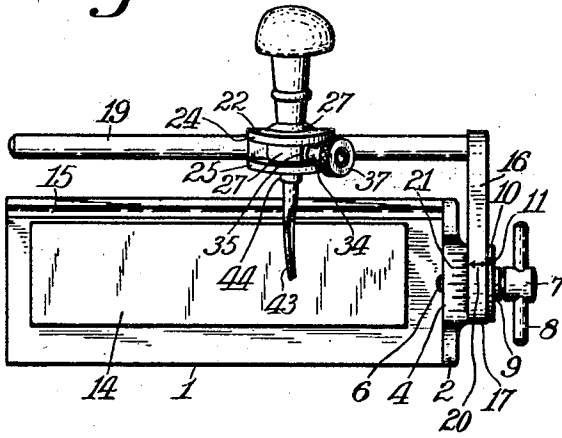


Fig. 3.

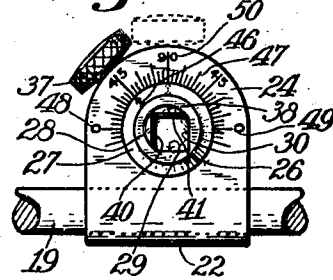


Fig. 4.

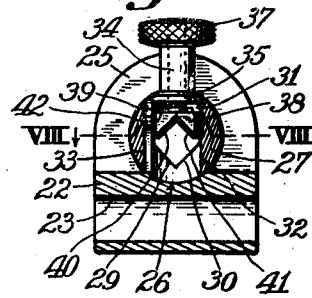


Fig. 5.

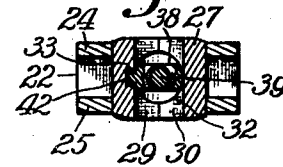


Fig. 6.

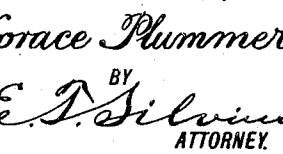


Fig. 7.

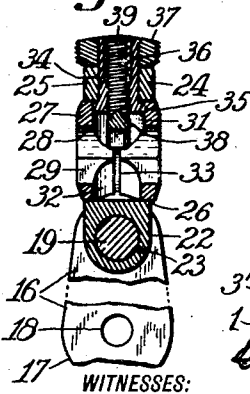
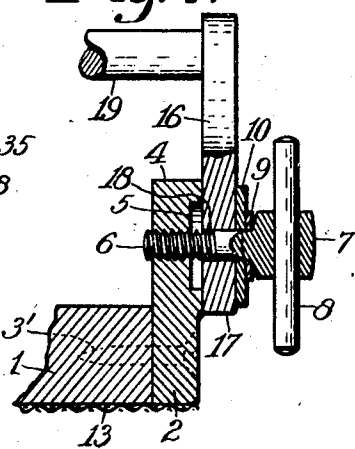


Fig. 8.



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UNIVERSAL TOOL-SHARPENER.

1,359,271.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HORACE PLUMMER, a citizen of the United States, residing in Center township, in the county of Hendricks and State of Indiana, have invented a new and useful Universal Tool-Sharpener, of which the following is a specification, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon.

This invention relates to a portable tool-sharpener that is designed for sharpening a variety of tools or instruments, the invention having reference more particularly to a tool-sharpener that is adaptable for use by engravers, jewelers or others having a variety of small instruments that must be accurately sharpened or reground to shape.

An object of the invention is to provide apparatus of such construction as to permit of being readily moved as a unitary structure from place to place, as from one to another work-bench, and be capable of being used for sharpening gravers, chisels, drills and other cutting tools and also for regrinding screw-drivers and other instruments.

Another object is to provide apparatus of the above-mentioned character, which shall be of simple and inexpensive construction, capable of being quickly and accurately adjusted so that tools or instruments may be quickly and accurately ground to various angles, and which shall be reliable, durable and economical in use.

With the above-mentioned and other objects in view, the invention consists in a machine that is adapted to carry and adjustably support an oil-stone or abrading-block, the machine having means for adjustably holding and guiding an instrument in various positions relatively to the oil-stone; the invention consisting also further in the novel features of the apparatus, and in the parts and combinations and arrangements of parts, as hereinafter particularly described and further defined in the accompanying claims.

Referring to the drawings,—Figure 1 is a top plan of a universal tool-sharpener constructed substantially in accordance with the invention; Fig. 2 is an end view of the tool-sharpener; Fig. 3 is a plan view of a guiding carrier whereby to hold and adjust the tool or instrument to be sharpened; Fig. 4 is a side view of the tool sharpener; Fig. 5 is a central section of the tool-carrier longi-

tudinally of its base portion; Fig. 6 is a central section of the carrier transversely of its base portion; Fig. 7 is a fragmentary sectional elevation approximately on the line VII—VII on Fig. 2; and, Fig. 8 is a section of the tool-carrier approximately on the line VIII—VIII on Fig. 5.

Similar reference characters on the different figures of the drawings indicate corresponding elements or features of construction herein referred to in detail.

A practical embodiment of the invention comprises a main supporting base 1, which preferably is composed of hard wood and having a flat top surface, the base being oblong in plan. A pivot-head is provided which comprises a base plate 2, which is placed uprightly against one end of the base and rigidly secured thereto by means of screws 3 and 3', and a head portion 4 rigidly fixed on or integral with the plate, the head portion being supported above the plane of the top of the base 1 and having a segmentally-rounded top. The front or outer side of the head portion preferably has a counter-bore 5 from the center of which extends a pivotal-screw 6, which is screwed into the head portion and has a head 7 thereon that is provided with a lever 8. A washer 9 is arranged on the pivotal-screw adjacent to the head 7, a spring-washer 10 being arranged on the pivotal-screw between the washer 9 and the head portion 4 and having a gap 11 therein, one portion 12 normally standing out obliquely from the plane of the spring-washer. Preferably the bottom of the main base 1 has a sound-deadener, such as a layer of felt 13 fixed thereon, to prevent the base from causing noise when dropped onto a table, being partly for the purpose of preventing the base from sliding too freely upon a work bench or table. An oil-stone or abrading block 14 is removably arranged upon the top of the main base 1 and may be readily shifted thereon if desired. The oil-stone may be readily replaced by another of different quality or thickness if found desirable. The top of the base 1 has a guide groove 15 therein that extends longitudinally of the base and preferably near one edge thereof, and the oil-stone may be tilted more or less, by hand with one lower edge thereof in the groove.

For the purpose of accurately guiding

the graver or other tool in contact with the oil-stone, a guide is adjustably mounted on the main base and comprises an arm 16, having a base portion 17 in which is a pivot hole 18 that receives the pivotal-screw 6, the base portion being arranged between the head portion 4 and the spring-washer 10, so that the arm may be tightly clamped by means of the pivotal-screw to the pivot-head; a cylindrical guide-bar 19 being rigidly fixed to the arm 16, so as to be parallel to the main base 1. Preferably the base portion 17 of the arm has a pointer mark 20 thereon, the top of the head portion 4 having graduated indicator marks 21 thereon to which the pointer may be moved. The arm 16 may be variously adjusted when the pivotal-screw 6 is slightly slackened. An improved carrier is provided which comprises a base portion 22, having a guide-bore 23 therein that receives the guide-bar 19 for guiding the carrier slidingly and also rotatively with respect to the guide-bar. The carrier has also two parallel guide wings 24 and 25 that extend from the base portion 22, the base portion and the wings having a circular guideway 26 therein in which a cylinder 27 is rotatively arranged, being transversely to the guide-bore 23, the cylinder being the main part of a chuck. The cylinder has a longitudinal opening therein that has a concave wall portion 28 and opposite angular portions 29 and 30, the latter portions forming a longitudinal V-shaped guide on which to securely seat the tool to be sharpened. The cylinder has also a transverse guideway therein, comprising portions 31 and 32, the wall of the cylinder on one side of the guideway having a groove 33 therein. A clamp-nut is provided which is designed to perform several functions and comprises a cylindrical main portion 34 that is fitted closely between the wings 24 and 25 and has a head flange 35 thereon that is arranged in the guideway portion 31 and so as to extend into the guideway 26 to engage the adjacent portion of the wings, the cylinder thus being retained in its guideway. The main portion 34 has a screw-threaded bore 36 therein and also a head collar 37, which is fixedly secured to the exterior of the main portion in close proximity to the ends of the guide-wings, which are circular, to permit the cylinder to turn one-half of a revolution. A chuck-jaw 38 is arranged in the transverse guideway of the cylinder, so as to operate in either of the portions 31 or 32 and it has a screw-threaded stem 39 which is received in the screw-threaded bore 36 of the nut, the stem and the nut together performing the function of a lever to rotate the cylinder. The chuck-jaw has angular working faces 40 and 41 to engage the tool or implement so as to force the latter tightly

on to the seat faces 29 and 30. One side of the chuck-jaw has a guide projection 42 thereon that extends into the groove 33 to be slidingly guided therein, for preventing rotation of the jaw in its guideway. A graver 43, or its handle portion 44 may be securely clamped in the cylinder on rotation of the head collar 37 in the proper direction, or a screw-driver 45, or other instrument, may be similarly securely held in the carrier.

One end of the cylinder 27 has an indicator pointer 46 thereon that is arranged so as to correspond to the position of the lever device of the cylinder, and the adjacent front face of the carrier has a graduated scale 47 thereon to which the pointer is adjusted in order to bring the faces of the graver or other tool to the proper desired angle on the face of the oil-stone or abrading-block. The scale has a zero mark 48 on one side of the cylinder and a zero mark 49 on the opposite side of the cylinder, both marks being on the line parallel to the guide-bar 19, the 90 degree mark 50 being on a relatively right-angled line.

In practical use, a graver or similar tool is secured in the carrier by means of the chuck devices, as in Figs. 1 and 2, or otherwise as may be required, after which the arm 16 is adjusted so as to bring the guide-bar 19 in the required position to guide the tool on the top of the oil-stone. When the nut is turned to clamp the tool in place the flange 35 locks the cylinder 27 in place. After grinding one side or face of the graver, the cylinder is readjusted to the proper angle and again secured in place. The operator simply grasps the carrier and moves it to and fro along the guide-bar while pressing the tool with the proper degree of force on to the oil-stone. In case it is desired to grind the end of a screw-driver true, the guide-bar 19 is set above the oil-stone, as in Fig. 4, and if a screw-driver requires resharpening, the guide-bar is set over sufficiently to bring the bevel face of the screw-driver squarely upon the oil-stone, in which position the cylinder pointer 46 is set at one of the zero marks. After grinding one bevel face, the cylinder is turned to the opposite zero mark, after which the bevel of the opposite side of the screw-driver is ground, so that the two sides of the screw-driver are parallel. Drills and various other tools or instruments may be ground with equal facility. In some cases the graver is slightly curved and in such case the oil-stone may be readily tilted by hand and slightly rocked while the grinding operations are taking place. When desired, instead of turning the chuck-cylinder, the carrier may be removed and then replaced in inverted position on the guide-bar.

Having thus described the invention, what is claimed as new is—

1. A tool-sharpener including a base having a pivot-head fixed thereon, an abrading-block supported upon the base, an arm adjustably secured to the pivot-head and having a cylindrical guide bar fixed thereon, and a carrier movable on the guide bar and provided with a chuck for holding the tool.
2. A tool-sharpener apparatus including a horizontally-supported guide bar, a carrier slidably mounted on the guide bar, a cylindrical chuck rotatively mounted in the carrier, and means for operating the chuck comprising a rotatable screw-operated and screw-operating device to close the chuck and also securely lock the chuck to the carrier.
3. A tool-sharpener including a base for supporting an abrading-block, a pivot-head rigidly connected to the base and having a binding-bolt connected thereto, an arm pivotally connected to the binding-bolt and thereby adjustably secured to the pivot-head, a cylindrical guide bar rigidly connected to the arm and extending parallel to the base, and a carrier mounted on the guide bar to slide or to turn thereon.
4. A tool-sharpener apparatus including a base having a pivot-head fixed thereon, an arm pivotally adjustable on the pivot-head, a cylindrical guide bar rigidly fixed to the arm, a carrier slidably and rotatively guided on the guide bar, a chuck rotatively mounted in the carrier and having an opening to receive the tool, and means for simultaneously closing the chuck on the tool and locking the chuck to the carrier.
5. In a tool-sharpener, the combination with a base, of a pivot-head rigidly connected to the base and having a counter-bore in a vertical portion thereof, a pivotal binding screw extending through the counter-bore and screwed into the pivot-head, the screw having a head on its outer end, a lever fixed to said screw head, a washer on said screw adjacent to the head, a spring-washer on said screw between the pivot-head and the first-mentioned washer, an arm on said screw between said pivot-head and

said spring-washer to be adjustably secured to the pivot-head by said screw, and a guide bar rigidly connected to said arm to support and guide a tool-carrier.

6. In a tool-sharpener, the combination with a cylindrical horizontal guide bar adjustably supported, of a tool-carrier comprising a base portion having a guide bore receiving said guide bar to permit sliding and rotative movement of the tool-carrier on the bar, two wings fixed to and extending from said portion, the wings being relatively parallel and having a cylindrically-shaped guideway therein, and a cylindrical chuck rotatively guided in said guideway and provided with an operating lever extending outward between said wings, said lever being constructed and arranged to simultaneously close said chuck and clamp the same to said carrier.

7. In a tool-sharpener, the combination with a supported guide bar, of a carrier comprising a base portion slidably supported on the guide bar and two parallel wings extending from the base portion, the edges of the wings being curved, the carrier having a cylindrical-shaped guideway therein extending transversely with respect to the guide bar, a cylinder rotatively mounted in the guideway and having a longitudinal opening therein to receive the tool, the cylinder having also a transverse guideway therein intersecting said opening, a jaw movably guided in the transverse guideway and having a screw-threaded stem that extends between said wings; and a nut comprising a cylindrical main portion that is screwed onto said stem and is guided by said wings, said main portion having a flange to engage said wings in the cylindrical guideway that guides said cylinder, and a head collar secured to said main portion of the nut opposite to the edges of said wings.

In testimony whereof, I affix my signature in presence of two witnesses.

HORACE PLUMMER.

Witnesses:

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I. C. WASKOM.